*1,1**0***

Quality Control

Page 1

August-23-12 1:36:28 PM Item ID: D407-667-105TRN Accept *N900040100* Setup Start Revision ID: Crosstube Turning Detail Item Name: **Start Date:** 23/08/2012 Start Otv: 1.00 **Cust Item ID: Required Date:** 06/09/2012 Rea'd Otv: 1.00 Customer: Reference: Run Process Plan: MLJ Date: 17/08/23 Tooling: Approvals: Date: OC: Date: SPC (Y/N): Date: Sequence ID/ Operation Tool ID Set Up/ Tool# Plan Accept Reject Reject Insp. Work Center ID Description Otv Code Run Hours Otv Number Stamp Draw Nbr **Revision Nbr** D407-667-145 Rev C 100 0.00 1 6 KC 12-9-20 MORI SEIKI CNC LATHE LARGE *100* Mori Seiki 0.00 Memo Mori Seiki CNC Lathe Large 1-Fill tube with sand & install plugs DT8673 on both ends as per Folio FA249 2-Turn first side as per Folio FA249 3-Blend transition lines only, **do not sand whole tube**: DWG REV: *Use mill bastard file, brush file repeatedly with file card. *Do not use sandpaper coarser than 320 grit. 110 QC1- Inspect dimensions to dimension sheet 0.00

0.00

Memo

NCD		,	
NCR:	Yes	/	No

DQASAA2	Date: 12/09/28	_
7-1	-	_

NCR: Y	es / No			_	WORK	OKDEK NON-C	.ONFORI	VIAINCE / UPI	DATE	QA Closed:	O Date:	12(9(2)
Work Orde	r: 89	47	7		D	ISPOSITION			AGAINST DE	PARTMENT	/PROCESS	
	o. <u>D407</u> -			TRN		Rework Scrap Use-as-is	1 1	Skid-tube Machining noforming	Crosstube Small Fab Finishing	Pro	Water Jet od. Eng. Coor. re/Packaging	Engineering Quality Other
NCR N	o. <u>17</u>	<u> </u>	54		Work	Order Update		Large Fab	Composite]	Supplier	
Root				Descri	ption of wo	rk order update	Initial	Act	tion	Sign &		
Cause	Date	Step	Qty		or Non-conf	ormance	Chief Eng	Desci	ription	Date	Verification	QC Inspector
Poc/Data quip/Tooling Operator	12/0/24	100)	Coff of	n hbe 241" -2	is under tol	DAS	Accopable	2.	12/4/24	TW	OAS 16
Material	F						12/8/29			12/8/29	JW 12-9-4	12/09/18
Other]								' '	' '	
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Supplier												
raining												
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Landin	g Gear				_ G	eneral	_			_	_	- -
	Bending				Bend		Grain			Ovalized		Pressure/Forced
-	Centre No	ot Concei	ntric to	o/s	BOM/Rout		Hardwa			Over/Under	tolerance	Temperature/Cure
·	Cracks				Broken/Da	maged		ion Incomplete		Part Incorre		Weld
·	@rushed/0	Crimped.		_	Burrs		—	ions Incomplete/	Unclear	Part Lost/M		Wrong Stock Pulled
-	Cuffs			_	Contaminat		Mainte			Part Moved		
-	Heat Trea			<u> </u>	Countersir		Mislabe			Positioned \		-
L	Inspection	•	Tube	<u> </u>	Cut Too Sho		Misrea	d		Power Loss		Other
-	Ripples in			<u> </u>	Drill Holes		Offset			MATOUR IS	on stout	_
_	Torque W		xtrusio	n _	Drawing		\vdash	Calibration				
1	Turning S	equence		i	Finish		Out of !	Sequence				

Outside Dimensions

Wave/Twist in Tube

August-23-12 1:36:28 PM

Item ID: D407-667-105TRN Accept *N900040100* Setup Start **Revision ID:** Crosstube Turning Detail Item Name: Start Date: 23/08/2012 Start Qty: 1.00 Cust Item ID: **Required Date:** 06/09/2012 Req'd Qty: 1.00 **Customer:** Reference: Run Start Process Plan: Approvals: Date: Tooling: Date: Stop QC: Date: SPC (Y/N): Date: Sequence ID/ Operation **Tool ID** Set Up/ Tool # Plan Accept Reject Reject Insp. **Work Center ID Description** Code Qty Number **Run Hours Qty** Stamp 120 0.00 MORI SEIKI CNC LATHE LARGE *120* Mori Seiki 0.00 Memo Mori Seiki CNC Lathe Large 1-Turn second side as per Folio FA249 2-Blend transition lines only, **do not sand whole tube**: *Use mill bastard file, brush file repeatedly with file card. *Do not use sandpaper coarser than 320 grit. FOLIO REV: AA DWG REV: 3-Remove sand and plugs 4-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-145 inside of Cuff(Do not engrave on outside of tube) 130 QC1- Inspect dimensions to dimension sheet 0.00 *130* 0.00 Memo Quality Control

12/08/25

NCR: Y	'es / No				WORK ORDER NON-O	CONF	ORN	//ANCE / UPDATE				
	·							•		QA Closed:	Dat	e:
Work Orde	er:				DISPOSITION			AGAINS	T DE	PARTMENT	PROCESS	_
Part N	· · · ·				Rework Scrap Use-as-is Work Order Update		N Therm	Skid-tube Crosstube Machining Small Fal noforming Finishing Large Fab Composite	b	4	Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other
					Work order opacie	¹		24,86,442		J		
Root				Descri	ption of work order update	Init	tial	Action		Sign &		
Cause	Date	Step	Qty		or Non-conformance	Chie	f Eng	Description		Date	Verification	n QC Inspector
Doc/Data	_											
Equip/Tooling								i				
Operator						ŀ		i				
Material			Į									
Setup												
Other												
Process								1				
Supplier]										
Training		ł										
Unapproved												
					Fa	AULT	CATE	GORY				
Landir	ng Gear			_	General	_			_	-	,	-
1	Bending			<u> </u>	Bend	∐G	rain		L	Ovalized		Pressure/Forced
	Centre No	ot Concei	ntric to	o/s	BOM/Route	<u></u> Н	ardwa	re		Over/Under	tolerance	Temperature/Cure
	Cracks			L	Broken/Damaged	ln	specti	on Incomplete	L	Part Incorred	:t	Weld
1	Crushed/	Crimped.			Burrs	L In	struct	ions Incomplete/Unclear	L	Part Lost/Mi	ssing	Wrong Stock Pulled
Ĺ	Cuffs				Contamination	∐м	1ainte	nance		Part Moved		
	Heat Trea	it ,			Countersink	Шм	lislabe	led		Positioned V	Vrong	
	Inspection	n Strip in	Tube		Cut Too Short	\square M	lisread	I		Power Loss/	Surge	Other
[Ripples in	Bend			Drill Holes		ffset					
Ī	Torque W	laives in F	vtrusia	,	Drawing	\Box	ut of C	alibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

August-23-12 1:36:28 PM

Item ID:

D407-667-105TRN

Accept

N900040100

Setup Start

Revision ID:

Item Name: Start Date:

Crosstube Turning Detail

23/08/2012 Start Oty: 1.00

Cust Item ID:

Customer:

Required Date: 06/09/2012

Reg'd Oty: 1.00

Reference:

Approvals:

Process Plan:

Date: ____ Tooling:

Date:

Run

Stop

Stop

Date: SPC(Y/N):

Date:

Work Center 1D

Operation Description

OC8- Inspect parts - second check

Set Up/ Run Hours Tool ID

Tool # Plan Code

Accept Qty

Reject Qty

Reject Number Stamp

Insp.

140

140

Quality Control

Sequence ID/

QC

Memo

0.00 0.00

Tw 12-9-4

145

115

Crosstubes

0.00

Memo

0.00

Crosstubes

GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.

150

150

HandFXtube

0.00

0.00

Hand Finishing Crosstubes

Memo

1- PRESSURE WASH X-TUBE INSIDE AND OUT

2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE

O SAN W-09-14

1 78 12-9-14

						MORK ORDER NOTE			AANCE / LIDDATE		DQA:	Date:	•
NCR:	Yes	/ No				WORK ORDER NON-C	.Or	NFORI	MANCE / UPDATE	Ω	A Closed:	Date:	
					•								
Nork Ord	er:					DISPOSITION			AGAINST D)EPA	ARTMENT/	PROCESS	
						Rework			Skid-tube Crosstube			Water Jet	Engineering
Part I	۷o.					Scrap		1	Machining Small Fab	٦	Prod	d. Eng. Coor.	Quality
						Use-as-is		Thern	noforming Finishing]	Rec/Stor	e/Packaging	Other
NCR I	No.					Work Order Update			Large Fab Composite			Supplier	
				1						$\overline{}$	s: 0 I		
Root		D = 1 =	c	۵.	Desi	otion of work order update	1	nitial	Action	1	Sign &	Mariffantian	061
Cause		Date	Step	Qty	<u> </u>	 or Non-conformance	Cn	ief Eng	Description	+	Date	Verification	QC Inspector
oc/Data													
quip/Tooling perator								:					
laterial													
etup													
ther					8					1	,		
rocess]										
upplier													
raining							ļ						
napproved													
						F	AUL	T CATE	GORY				
Landi	ng (Gear	٠			General			_	_			_
	L	Bending			l	 Bend	<u></u>	Grain		_ c	Ovalized		Pressure/Forced
		Centre No	ot Concer	ntric to	o/s	 BOM/Route	L	Hardwa	re	_	ver/Under	}	Temperature/Cure
	<u> </u>	Cracks				 Broken/Damaged		1	on Incomplete	_	art Incorred		Weld
	_	Crushed/	Crimped.			Burrs	<u></u>	Į.	ions Incomplete/Unclear	_	art Lost/Mi	ssing	Wrong Stock Pulled
	_	Cuffs				Contamination		Mainte	⊢		art Moved		·
	<u> </u>	Heat Trea				 Countersink	<u> </u>	Mislabe	-		ositioned V	_	7
	<u> </u>	Inspection		Tube		 Cut Too Short	<u> </u>	Misread	i <u>[</u>	P	ower Loss/	Surge	Other
		Ripples in				Drill Holes	<u></u>	Offset	- W	_			
	\vdash	Torque W			n	 Drawing	<u> </u>	1	Calibration	_			
	l	Turning S	equence		Ì	Finish	1	Out of S	Sequence				

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Wave/Twist in Tube

Insp.

August-23-12 1:36:28 PM

180

120

Quality Control

Item ID: D407-667-105TRN Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail Start Date: 23/08/2012 Start Otv: 1.00 Cust Item ID: **Required Date:** 06/09/2012 Rea'd Otv: 1.00 **Customer:** Reference: Run Date: _____ Approvals: Process Plan: **Tooling:** Date: Stop SPC (Y/N): Date: Date: Sequence ID/ Operation Set Up/ Tool ID Tool# Plan Reject Reject Accept Work Center ID Description Number Stamp Code Otv Otv Run Hours 160 QC5- Inspect part completeness to step on W/O 0.00 *160* QC 0.00 Memo Quality Control 170 0.00 Packaging *170* Packaging 0.00 Memo Packaging Identify and stock in Kanban rackLocation:

0.00

0.00

QC21- Final Inspection - Work Order Release

Memo

											DQA:	Date	:
NCR:	Yes	/ No				WORK ORDER NON-C	100	VFORM	MANCE / UPDATE		0.4.61 4	D-4-	
1											QA Closed:	Date	:
Work Ord	er:					DISPOSITION			AGA	AINST DE	PARTMENT,	/PROCESS	
Part I	No.					Rework Scrap Use-as-is Work Order Update		f Therm	Machining Sma	stube Ill Fab ishing posite		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update	П	nitial	Action		Sign &		
Cause		Date	Step	Qty	C	or Non-conformance	Ch	ief Eng	Description		Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved													
						F	AUL	T CATE	GORY				
Landi		Gear Bending			Г	General Bend		Grain			Ovalized		Pressure/Forced
		Centre No	nt Conce	ntric to		BOM/Route	\vdash	Hardwa	rρ	-	Over/Under	tolerance	Temperature/Cure
	\vdash	Cracks	or conce	itile to	⁵ , –	Broken/Damaged	\vdash	i	on Incomplete		Part Incorre	 	Weld
		Crushed/	Crimped.			Burrs		1 '	ions Incomplete/Unclear		Part Lost/M	issing	Wrong Stock Pulled
		Cuffs				Contamination		Mainte	nance	·	Part Moved	<u> </u>	•
		Heat Trea	ıt			Countersink	Г	Mislabe	led		Positioned V	Vrong	
		Inspection	n Strip in	Tube		Cut Too Short		Misread	I		Power Loss/	Surge	Other
		Ripples in	Bend			Drill Holes		Offset			•	_	•

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Picklist Print

August-23-12 1:36:32 PM

Work Order ID: 89479

Parent Item Name: Crosstube Turning Detail

89479

Parent Item:

D407-667-105TRN

D407-667-105TRN

Start Date: 23/08/2012

Required Date: 06/09/2012

Start Qty: 1.00

Required Oty: 1.00

Comments:

IPP Rev:a08.02.28 new issueEC

IPP Rev B 08.04.02 Removed polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6010-115		Manufactured	No	· · · · · · · · · · · · · · · · · · ·		110	Each	25.0000	1	1			
*D6010 11	5 *								**				

100010-115

Crosstube Material

Location Loc Qty Loc Code LG 25 11 14

Kc 12-8-24

Page 1

												DQA:	Da	te:	
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UP	DATE	Ο Δ	Closed:	D.	te:	
						<u>. </u>		<u> </u>		<u> </u>	ŲA	Closed:	Da	te:	
Work Ord	er.					DISPOSITION				AGAINST DI	EPAF	RTMENT	/PROCESS		
Part I	- No					Rework Scrap Use-as-is Work Order Update		Therm	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite			Water Jet d. Eng. Coor e/Packaging Supplier		Engineering Quality Other
Root					Descri	ption of work order update	Т	Initial	Act	tion	S	Sign &			
Cause	ļ	Date	Step	Qty	-	or Non-conformance	Cł	nief Eng	Desci	ription	1	Date	Verificatio	n	QC Inspector
Doc/Data		•					T								
Equip/Tooling									,				•		
Operator	Ш		1	1 1											
Material	Ш														·
Setup	Ш														
Other	Ш											:			
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Supplier	Ш														
Training	Ш		•	}											•
Unapproved								*							
							AUI	LT CATE	GORY						
Landi	ing G	iear				General		-		_	_				•
	\vdash	Bending				Bend		Grain			Ov	alized			Pressure/Forced
	_	Centre No	ot Conce	ntric to C)/S	BOM/Route		Hardwa	re		Jov	er/Under	tolerance		Temperature/Cure
	\vdash	Cracks				Broken/Damaged		Inspecti	on Incomplete	L	Par	rt Incorre	ct.	<u>. </u>	Weld
	_	Crushed/	Crimped.			Burrs		-	ions Incomplete/	Unclear	Par	rt Lost/Mi	ssing		Wrong Stock Pulled
	\vdash	Cuffs				Contamination		Mainte			Par	rt Moved			•
	Ш	Heat Trea	it			Countersink	_	Mislabe	led		Pos	sitioned V	Vrong		•
	Ш	Inspectio [®]	n Strip in	Tube		Cut Too Short		Misread	!		Po	wer Loss/	Surge		Other
	1	Ripples in	Bend			Drill Holes	1	Offset							

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	89479
Description: Crosstube Assembly	Part Number:	D407-667-145
Inspection Dwg: D407-667-145 Rev: C	13.7	Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

ln	spection Sheet		Actual			Method of	
	wing Dimension	Tolerance	Dimension	Accept	Reject	Inspection .	Gomments (
	2.240	+0.005/-0.000	2.242			vern	CN0-08
	1.865	+0.005/-0.000	1.870			1	
	1.878	+0.005/-0.000	1.882				
	1.970	+0.005/-0.000	1-975				
	2.030	+0.005/-0.000	2.034				,*
_	2.165	+0.005/-0.000	2.165	/		U	Service A
ΕA						ų .	
SIDE						1.	. **
0,	0.125	+/-0.010	.125			vern	(NCOS
	R0.063	+/-0.010	.063	r		AG.	
	R0.500	+/-0.010	.500		Ī	()	77 - 19 Sees
	R0.063	+/-0.010	.063			٠,١	
	4.438	+/-0.030	4.440			vern	crc-06
	2.240	+0.005/-0.000	2243			verv	CNC-08
	1.865	+0.005/-0.000	1.870				
	1.878	+0.005/-0.000	1-883	/			
	1.970	+0.005/-0.000	1.575				
	2.030	+0.005/-0.000	2.034			(-
	2.165	+0.005/-0.000	2.169	<i>C</i>		V	
8			,			·	
SIDE							
S	0.125	+/-0.010	.125			vern	cord
	R0.063	+/-0.010	-063			R6	
	R0.500	+/-0.010	-063 -500			()	
	R0.063	+/-0.010	. 063			(1)	
	4.438	+/-0.030	4.440			ver	ONCOS
	113.20	+/-0.020	113.20			tape :	[6-22
						,	

										DQA:	Date:	
NCR:	Yes / No				WORK ORDER NON-0	COI	NFOR	MANCE / UPDATE		QA Closed:	Date:	
Work Ord	or:			g. B.	DISPOSITION			AGAINS	T DE	PARTMENT,	PROCESS	
Part I	No.				Rework Scrap Use-as-is Work Order Update			Skid-tube Crosstub Machining Small Fa noforming Finishin Large Fab Composit	b g	1	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root				Descri	ption of work order update	ı	nitial	· Action		Sign &		
Cause	Date	Step	Qty		or Non-conformance	Ch	ief Eng	Description		Date	Verification	QC Inspector
Doc/Data												
Equip/Tooling												
Operator						ļ						
Material					•							
Setup												
Other						İ						
Process												
Supplier								,				
Training												
Unapproved												
					F	AUL	T CATE	GORY				
Landi	ng Gear				General		-				_	=
	Bending				Bend .		Grain		L	Ovalized		Pressure/Forced
	Centre N	lot Conce	ntric to	O/S	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure
*	Cracks			<u>L</u> .	Broken/Damaged		Inspect	on Incomplete		Part Incorre	ct	Weld
·	Crushed	/Crimped			Burrs		Instruct	ions Incomplete/Unclear		Part Lost/Mi	issing	Wrong Stock Pulled
	Cuffs				Contamination		Mainte	enance		Part Moved		
	Heat Tre	at			Countersink		Mislabe	eled		Positioned V	Vrong	

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Power Loss/Surge

Other

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Inspection Strip in Tube

Torque Waves in Extrusion

Cut Too Short

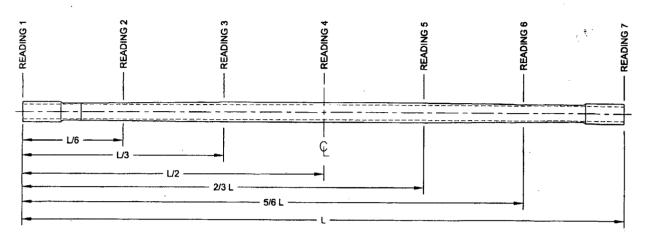
Drill Holes

Drawing

Finish

DART AEROSPACE LTD	Work Order:	89479
Description: Crosstube Assembly	Part Number:	D407-667-145
Inspection Dwg: D407-667-145 Rev: C		Page 2 of 2

WALL THICKNESS MEASUREMENT



	WALL	THICKNESS	MEASUREME	NT (IN)	Deviation	
Location	w1	w2	. w3	w4	Δw (max-min)	TOLERANCE
READING 1 L= 0"	.325	.321	320	.325	3	,005
READING 2	-161	. 158	153	.165		.012
READING 3	,234	-216	-217	.244	-	-028
READING 4	.327	. 322	.314	, 328	-333	0.042" + 014
	: 227	.236	.225	.222		.008
READING 6	.16	.161	.156	-163		.007
READING 7 L= CWFF	. 318	·316	. 322	.331	-346	-021

Calibration Result

Actual Block Thickness: 100 - .560

Sitescan 250 Measured Thickness: . 100 - . 560

Measured by: June, U	Audited by:	JW	Preliminary Approval:	
Date: 12/08/25	Date:	12-9-4	Date:	

Date	Change	Revised by	Approved
04.04.21	New Issue (P/O D407-667-105)	KJ/RF	
06.03.09	Dwg Rev updated	KJ/JLM	
09.06.11	Dwg Rev updated	KJ	
11.06.21	Tolerance revised for 4.438 dimension	KJ + A	
12.06.04	Wall thickness form added	KJ 🕏	N/L
and the second of the second	04.04.21 06.03.09 09.06.11 11.06.21	04.04.21 New Issue (P/O D407-667-105) 06.03.09 Dwg Rev updated 09.06.11 Dwg Rev updated 11.06.21 Tolerance revised for 4.438 dimension	04.04.21 New Issue (P/O D407-667-105) KJ/RF 06.03.09 Dwg Rev updated KJ/JLM 09.06.11 Dwg Rev updated KJ 11.06.21 Tolerance revised for 4.438 dimension KJ

											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UP	DATE		-	
											QA Closed:	Date:	
Work Orde	er.					DISPOSITION		AGAINST DEPARTMENT/PROCESS					
Work Orac	C1.		····			Rework	7		Skid-tube	Crosstube]	Water Jet	Engineering
Part I	No.					Scrap		ľ	Machining	Small Fab	Pro	d. Eng. Coor.	Quality
						Use-as-is		9	noforming	Finishing	Rec/Sto	re/Packaging	Other
NCR 1	No.	 				Work Order Update			Large Fab	Composite	_	Supplier	
Root					Descri	ption of work order update		Initial	Ac	tion	Sign &		Ĭ
Cause		Date	Step	Qty	(or Non-conformance	Cł	nief Eng	Desc	ription	Date	Verification	QC Inspector
Doc/Data	Ш												
Equip/Tooling	Ш												
Operator	Ш												
Material	Ш						1						
Setup	Ш												
Other	Ш												
Process													
Supplier													
Training								•					
Unapproved			<u> </u>										
							FAU	LT CATE	GORY				
Landi		1			_	General	_	7			- 1	_	3
		Bending			<u> </u>	Bend	\perp	Grain		ļ	Ovalized		Pressure/Forced
	_	Centre No	ot Conce	ntric to (D/S	BOM/Route		Hardwa		<u> -</u>	Over/Under	<u> </u>	Temperature/Cure
	igspace	Cracks			<u> </u>	Broken/Damaged	_	4 '	on incomplete	_	Part Incorre	 	Weld
	-	Crushed/	Crimped,			Burrs	\vdash	-i	ions Incomplete/	'Unclear	Part Lost/M	_	Wrong Stock Pulled
	Ш	Cuffs				Contamination	_	Mainte			Part Moved		
	Щ	Heat Trea			<u></u>	Countersink	<u> </u>	Mislabe			Positioned		7
	_	Inspectio		Tube		Cut Too Short	L	Misread	i		Power Loss,	/Surge	Other
	1	Ripples in	Bend		- 1	Drill Holes	1	Offset					

Out of Calibration

Outside Dimensions

Out of Sequence

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Item	Qty -145	Part Number	Description
1	Х	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
2	1	D6010-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

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1) MATERIAL: MANUFACTURED FROM D6010-115

FINISHED LENGTH = 113,20±0,020

2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART QSI 005 4.2

- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES LINLESS OTHERWISE NOTED
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-145" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 17.8 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN CUTTER OFF PART WHERE INDICATED, BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY RETURN TO **ENGINEERING** UNCONTROLLED COPY SUBJECT TO AMENDMENT WITHOUT NOTICE WORK ORDER NO. 89479 MLJ 12/08/23

DEO ATTACHED

EW#11-615

C	REORG TO CUR D3595-0 REMOV D2-3); R MOVED	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT-STANDARDS. D3595-083-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. 7 ADD TOLERANCES (ZN C6-3, C4-3, D2-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.										
В		DLES AND NUT HT/AA SKUDTU	PLATES FOR COMPATABILITY JBES	PH	05.07.26							
Α	NEW IS	SSUE		CP	02.05.08							
REV.		. (DESCRIPTION	BY	DATE							
DESIGN		q)	DART AEROSP	ACE	LTD							
DRAWN		RF	HAWKESBURY, ONTAR	IO, CANA	ADA							
CHECK	ED	ar	DRAWING NO.		REV. C							
MFG. AF	PR.	80	D407-667-145 SHEET 1 OF									
APPRO\	VED	TUS	TITLE SCALE									
DE APP	R.	-#	CROSSTUBE ASS'Y (407 HIGH FWD) NTS									
DATE	08.1	1.06	COPYRIGHT © 2002 BY DART AT THIS COCUMENT IS PRIVATE AND CONFIDENTIAL AND IS REPORTED FOR COMPANIES OF COMPANIES.	ON THE EXPRES	S CONDITION THAT IT IS							

											DQA:	Date:		
NCR:	Yes	/ No				WORK ORDER NON-	COI	NFORM	MANCE / UPD	DATE	QA Closed:	Date:		
Work Ord	ar:					DISPOSITION			AGAINST DEPARTMENT/PROCESS					
Part I	1 1 1 1					Rework Scrap Use-as-is Work Order Update	Scrap Machining Small Fab Use-as-is Thermoforming Finishing			Small Fab Finishing	Pro Rec/Sto	Engineering Quality Other		
Root					Descri	ption of work order update		Initial	Acti	on	Sign &			
Cause		Date	Step	Qty	·	or Non-conformance	Ch	nief Eng	Descri	ption	Date	Verification	QC Inspector	
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved								-						
	·					<u> </u>	AUI	LT CATE	GORY					
Landi		Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube			o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread			Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V	ct sissing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other	
j		Ripples ir	Bend			Drill Holes		Offset		<u></u>	-	<u> </u>		

Out of Calibration

Outside Dimensions

Out of Sequence

Turning Sequence

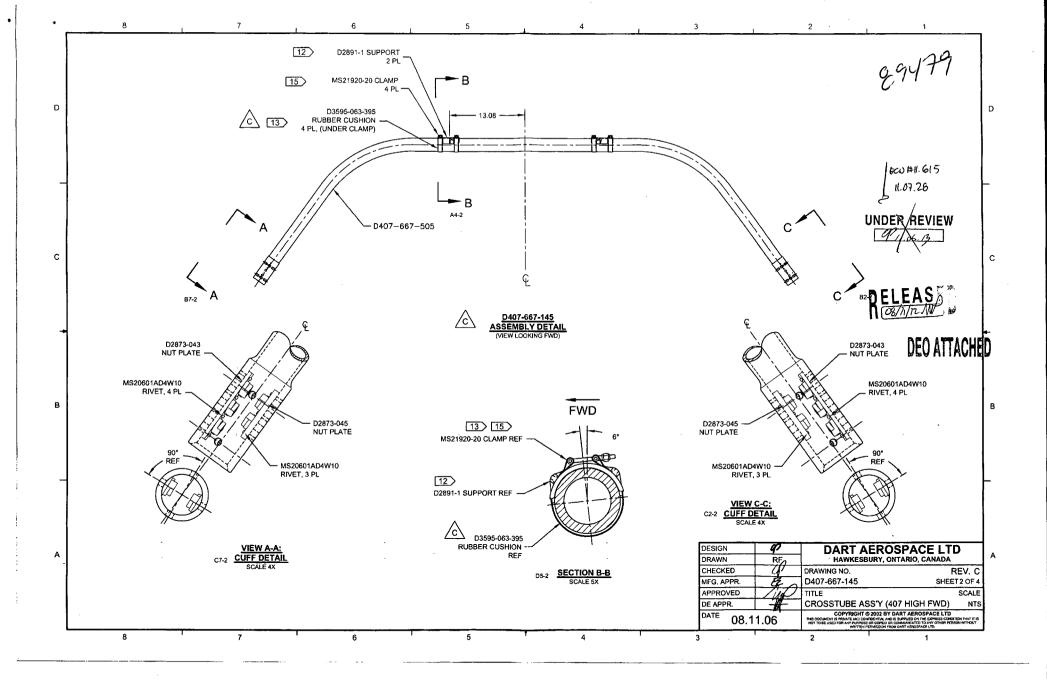
Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

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	DQA:	Date:	
WORK ORDER NOW CONFORMANCE AURRATE			

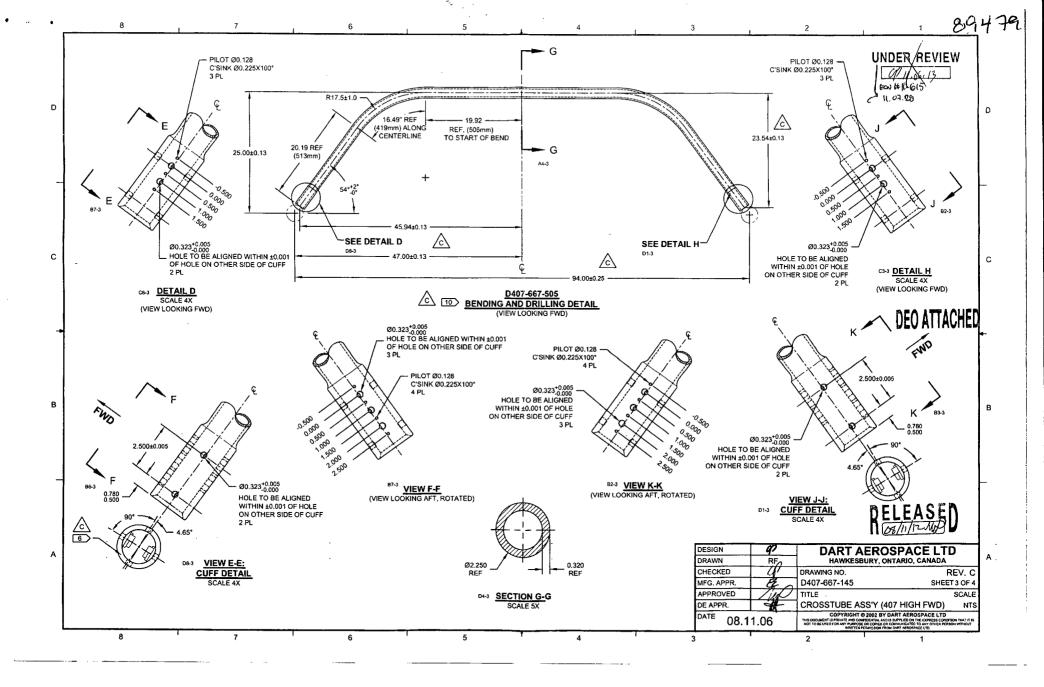
NCR: Yes / No **WORK ORDER NON-CONFORMANCE / UPDATE** QA Closed: Date: AGAINST DEPARTMENT/PROCESS DISPOSITION Work Order: Crosstube Engineering Skid-tube Water Jet Rework Prod. Eng. Coor. Quality Scrap Machining Small Fab Part No. Thermoforming Finishing Rec/Store/Packaging Other Use-as-is NCR No. Work Order Update Large Fab Composite Supplier Description of work order update Initial Action Sign & Root Description Verification Cause Date Step Qty or Non-conformance Chief Eng Date QC Inspector Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved **FAULT CATEGORY Landing Gear** General Pressure/Forced Grain Ovalized Bending Bend BOM/Route Temperature/Cure Centre Not Concentric to O/S Hardware Over/Under tolerance Broken/Damaged Weld Cracks Inspection Incomplete Part Incorrect Crushed/Crimped. Burrs Wrong Stock Pulled Instructions Incomplete/Unclear Part Lost/Missing Cuffs Contamination Maintenance Part Moved Heat Treat Countersink Mislabeled Positioned Wrong **Cut Too Short** Power Loss/Surge Other Inspection Strip in Tube Misread Ripples in Bend **Drill Holes** Offset Torque Waves in Extrusion Drawing Out of Calibration Turning Sequence Finish Out of Sequence

Outside Dimensions

Carl Bay

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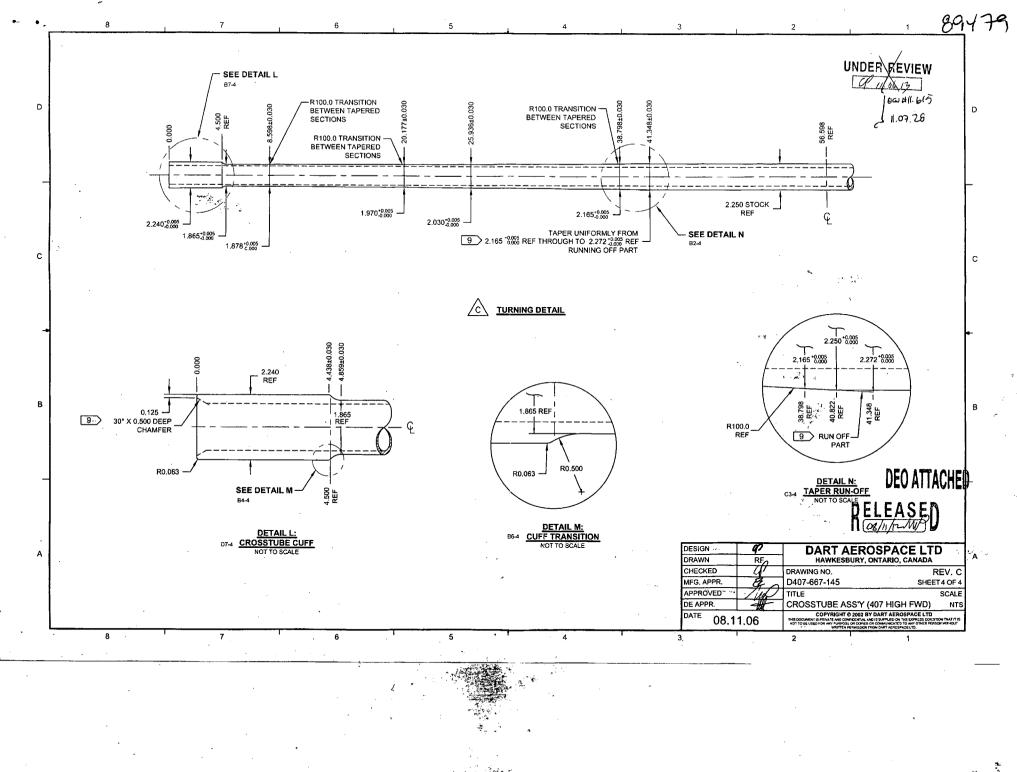
Wave/Twist in Tube



		DQA:	Date:
ICR: Yes / No	WORK ORDER NON-CONFORMANCE / UPDATE		

											QA Closed:	Date	;
Work Order: DISPOSITION								AGAINST DEPARTMENT/PROCESS					
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		Crushed/	Crimped.			Burrs	-	1	ions Incomplete	/Unclear	Part Lost/M	_	Wrong Stock Pulled
	_	Cuffs				Contamination	-	Mainte			Part Moved		
	-	Heat Trea			<u> </u>	Countersink	\vdash	Mislabe		<u> </u>	Positioned V		٦
	_	Inspection	•	Tube	<u> </u>	Cut Too Short	-	Misrea	d		Power Loss/	'Surge	Other
		Ripples in			<u> </u>	Drill Holes	-	Offset	- 111 · ·				
	<u> </u>	Torque W			n	Drawing	-	1	Calibration				
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1		Wave/Tw	rist in Tul	oe -		Folio		Outside	Dimensions				

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Mislabeled

Out of Calibration

Out of Sequence

Outside Dimensions

Misread

Offset

Positioned Wrong

Power Loss/Surge

Other

Ripples in Bend

Turning Sequence

Wave/Twist in Tube

Heat Treat

Inspection Strip in Tube

Torque Waves in Extrusion

Countersink

Cut Too Short

Drill Holes

Drawing

Finish

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DOMESTIC TO THE		The state of the s			
DRAWING NO. TITLE	REV. C	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D407-667-145 CRO	SSTUBE ASS'Y (407 HIGH FWD)	ENGINEERING ORDER	D407-667-145-C-1	SHEET 1 OF 1	NTS
DRAWN 97	CHECKED /	MFG. APPR.	APPROVED (M)	DE APPR.	
DATE 11.07.15	DATE 11,07.22	DATE 11:07:22	DATE 4/07/22	DATE 11.07-2]

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

ltem	Qty -145	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRADE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



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											DQA:	Date:	
NCR:	Yes	/ No				WORK ORDER NON-O	100	NFORM					
											QA Closed	Date:	
Work Order:						DISPOSITION			AGAINST DE	PARTMENT	/PROCESS		
Part No.						Scrap Scrap Therm		Skid-tube Crosstube Machining Small Fab		Water Jet Prod. Eng. Coor. Rec/Store/Packaging		Engineering Quality Other	
NCR I	No.					Work Order Update]		Large Fab	Composite]	Supplier	
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		Cracks				Broken/Damaged		Inspecti	ion Incomplete		Part Incorre	ect	Weld
	Cracks Crushed/Crimped.					Burrs		Instruct	ions Incomplete	e/Unclear	Part Lost/N	lissing	Wrong Stock Pulled
		Cuffs	•			Contamination	Г	Mainte	•		Part Moved	_	-
		Heat Trea	it			Countersink		Mislabe	eled		Positioned	Wrong	
		Inspection Strip in Tube				Cut Too Short		Misread			Power Loss	· · ·	Other

Offset

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Torque Waves in Extrusion

Drill Holes

Drawing

Finish

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		,										$\mathcal{O}^{\prime\prime}$
DRAWING NO. TITLE				REV. C	DART AE	ROSPACE L	TD	D.E.O. NO.		SHE	ET NO.	SCALE
D407-6	67-145	CROSS	TUBE ASS'Y (40	7 HIGH FWD)		RING ORDE	1	D407-66	7-145-C-2	SHEE	T 1 OF 1	NTS
DRAWN	A	JS	CHECKED	4	MFG. APPR.	己	APP	ROVED	140	DE APPR.	4	
DATE	12.08	.02	DATE	12.08.02	DATE	12.08.02	DAT	E	12.08.02	DATE	12.08	2

PURPOSE:

ADD ELECTRICAL GROUNDING STRAP

CHANGE:

ITEM	QTY -145	PART NUMBER	DESCRIPTION	1
1	Х	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)	7
10	2	AN742D36	CLAMP	$\exists \exists$
11	2	MS9165-05	ANGLE BRACKET	1
12	2	MS21042L3	NUT (OR MS21042-3)	1 -/
13	2	MS27039-1-08	SCREW	1
14	4	NAS1149C0332R	WASHER (OR AN960C10L)	7

GENERAL NOTES:

- 16) MASK AREA UNDER CLAMP PRIOR TO PAINTING
- 17) SEAL EDGES WHERE AN742D36 CLAMP MEETS WITH THE CROSSTUBE USING SIKAFLEX-241/-291 OR MIL-S-8802 CLASS B2 OR PROSEAL 890 SEALANT
- 18) PERFORM RESISTANCE CHECK TO ENSURE MAX RESISTANCE IS 10 MILLIOHMS



MS27039-1-08 AN742D36 D407-667-505 CROSSTUBE **SCREW** CLAMP 16 NAS1149C0332R WASHER MS9165-05 ANGLE BRACKET NAS1149C0332R WASHER MS21042L3 NUT 0.50 CROSSTUBE REF Œ **DETAIL P** BONDING STRAP INSTALLATION 2 PL

- ADD

SECTION R-R

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NCR:	Yes /	No	WORK ORD

WORK ORDER NON-CONFORMANCE / UPDATE

DQA:

NCN.	CJ	7 140					WORK ORDER WOR			virately or		QA Closed:	Date:			
Work Orde	r: _						DISPOSITION . Rework			AGAINST DEPARTMENT/PROCESS Skid-tube Crosstube Water Jet Engineering						
Part N	ο.						Scrap	1		Machining	Small Fab	Pro	d. Eng. Coor.	Quality	┪┃	
NCR N	o						Use-as-is Work Order Update		Thern	noforming Large Fab	Finishing Composite	Rec/Sto	re/Packaging Supplier	Other		
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		Cracks	÷	•	. [Broken/Damaged		Inspect	ion Incomplete		Part Incorre	ct	Weld		
		Crashed/0	Crimped.	*	[Burrs	,	Instructions Incomplete/Unclear			Part Lost/M	issing	Wrong Stock Pul	led	
[Cuffs			• [Contamination		Mainte	enance		Part Moved				
, [Heat Trea	it		[Countersink		Mislabe	eled		Positioned \	Nrong			
		Inspection	n Strip in	Tube			Cut Too Short		Misread	d		Power Loss,	/Surge	Other		
[Ripples in	Bend				Drill Holes		Offset		* -	· ·		. *		
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